Volume Three

X Window System User's Guide

OSF/Motif 1.2 Edition

by Valerie Quercia and Tim O'Reilly

Technische Universität Darmstadt
FACHBEREICH INFORMATIK
BIBLIOTHEK
Inventar-Nr.: M02-0044
Sachgebiete:
Standort:

O'Reilly & Associates, Inc.

Table of Contents

Page

Preface xxv

Do I Have To Read This WHOLE Book? xxv
A Quick Start Approach to X xxv
Assumptions xxviii
What's New in Release 5? xxviii
New Client Programs xxviii
Defunct Programs xxix
Clients that Work Differently in Release 4 and Release 5 xxix
Available Fonts xxx
Available Colors xxx
Screen-specific Resources xxx
Bulk Sales Information xxx
Acknowledgements xxxi
Font and Character Conventions xxxii

PART ONE: Using X 1

Chapter 1 An Introduction to the X Window System 5

Anatomy of an X Display 6
Standard X Clients versus Motif Clients 15
X Architecture Overview 19
The X Display Server 21
Clients 21
The Window Manager 22
The xterm Terminal Emulator 23
The Display Manager 23
Other Standard X Clients 24
Customizing Clients 25

Chapter 2 Getting Started 29

Starting X 29
Logging On in the Special xdm Window 30
Logging In at a Full Screen Prompt 32
Starting X Manually 33

Starting the mwm Window Manager 34
Typing In a Window Once mwm is Running 35

Chapter 3 Working in the X Environment 41

Creating Other Windows 41
Using the Pointer 43
Managing Windows Using the mwm Frame 44
Converting a Window to an Icon 45
Converting an Icon to a Window 46
Maximizing a Window 47
Raising a Window or Icon 49
Moving a Window 50
Moving an Icon 51
Resizing a Window 52
Closing a Window: The Window Menu Button 55
Exiting from an xterm Window 56
Starting Additional Clients 58
Command-line Options 59
Window Geometry: Specifying Size and Location 59
Running a Client on Another Machine: Specifying the Display 63
The DISPLAY Environment Variable 64
Using –display 65
Once You Run a Remote xterm Using –display 66
Logging In to a Remote System 67
Monitoring the Load on a Remote System 67
Putting It All Together 68
Customizing a Program 71
Customizing the X Environment 72
Where to Go from Here 74

Chapter 4 More About the mwm Window Manager 77

Using Special Keys 78
Input Focus and the Window Manager 79
Focusing Input on an Icon 80
Changing the Stacking Order with Keystrokes 80
Transferring (Explicit) Focus with Keystrokes 81
What To Do if mwm Dies and the Focus Is Lost 82
A Quick Review of Frame Features 82
Using the Window Menu 83
Invoking Window Menu Items 85
Pointer Commands to Manage Icons 86
Using the Window Menu on Icons 87
The Root Menu 88

Chapter 5 The xterm Terminal Emulator 93

Terminal Emulation and the xterm Terminal Type 94
Resizing and Terminal Emulation 95
Running xterm with a Scrollbar 96
The Athena Scrollbar 97
How to Use the Scrollbar 98
Copying and Pasting Text Selections 100
Selecting Text to Copy 100
Extending a Selection 102
Pasting Text Selections 105
The Text Selection Mechanism and xclipboard 106
Saving Multiple Selections with xclipboard 107
Problems with Large Selections 111
Editing Text Saved in the xclipboard 112
The xterm Menus 112
The Main Options Menu 114
VT Options Menu 117
VT Fonts Menu 119
Tek Options Menu 120

Chapter 6 Font Specification 125

What's New in Release 5? 126
If You Just Want to Pick a Font 127
Font Naming Conventions 128
Font Families 129
Stroke Weight and Slant 132
The Size of Bitmap and Outline Fonts 133
Other Information in the Font Name 135
Font Name Wildcarding 137
Specifying Scalable Fonts 140
The Font Search Path 140
Modifying the Font Search Path 141
The fonts.dir Files 143
Font Name Aliasing 144
Making the Server Aware of Aliases 146
Utilities for Displaying Information about Fonts 146
The Font Displayer: xfd 146
Previewing and Selecting Fonts: xfontsel 148
Previewing Fonts with the xfontsel Menus 149
Selecting a Font Name 152
Changing Fonts in xterm Windows 153
The Great Escape 153
The Selection Menu Item 154
Using the Font Server 155
The Font Server config File 156

Running the Font Server 156
Adding a Server to the Font Path 157
Font Server Clients 158

Chapter 7 Graphics Utilities 163

Overview of the bitmap Editor 164
Menu Bar 164
Editing Command Buttons 164
Editing Area 165
Image Size Versus Window Size 167
What's New in Release 5 168
bitmap Editing Commands 169
Pointer Commands to Draw 169
Bitmap Command Buttons 170
Undo 170
Drawing: Point, Curve, Line, Rectangle, Circle 170
Filling in a Shape: Flood Fill 175
Clear, Set, and Invert 177
Marking an Area for Editing or Pasting 178
Copying or Moving an Area Within the Bitmap Window 181
Rotating or Moving with Arrow Buttons 183
Setting and Clearing a Hot Spot 185
Using the Menus 185
Dialog Boxes and Command Buttons 186
The File Menu 188
Inserting a File 190
The Edit Menu 191
Transferring Bitmap Images Using the Edit Menu 193
Magnifying Portions of the Screen: xmag 196
Selecting an Area to Magnify 197
xmag Command Buttons 198
Magnifying A Different Source Area: replace or new 198
Copying and Pasting Images: select and paste 199
What xmag Shows You 200
Removing an xmag Window: close 201
Creating a Bitmap from a Cursor 201
The Portable Bitmap Toolkit 204

Chapter 8 Other Clients 209

Redrawing the Screen: xrefresh 210
Desk Accessories 210
Clock Programs: xclock and oclock 211
Removing an xclock or oclock 214
A Scientific Calculator: xcalc 215

Terminating the Calculator 216
Mail Notification Client: xbiff 216
Monitoring System Load Average: xload 217
Browsing Reference Pages: xman 218
The xedit Text Editor 222
Printing Utilities: xwd, xpr, xdpr 229
Killing a Client Window with xkill 231
Problems with Killing a Client 232
Window and Display Information Clients 233
Displaying Information About a Window: xwininfo 233
Examining the Window Hierarchy 236
Listing the Currently Running Clients: xlsclients 239
Generating Information About the Display: xdpyinfo 240
User-contributed Clients 241
Previewing Colors for Your Monitor: xcol 241
Creating Colors of Your Own: xcoloredit and xtici 245
xcoloredit 246
Using a Color Within an Application 248
Saving Multiple Colors Using the Color Cells 249
What Are the H, S, and V Sliders For? 251
Quitting xcoloredit 251
xtici (The TekColor Editor) 251
Choosing a Hue to Edit 253
Changing the Hue with the Hue Bar 254
Adjusting the Color with the Hue Leaf 256
Selecting and Pasting the Numeric Color Value 257
Working with the Numeric Color Values 257
Problems Allocating Color Cells 258
Quitting xtici 259

PART TWO: Customizing X 261

Chapter 9 Working with Motif Applications 265

Pointer Button Usage 265
The Periodic Table of Motif Widgets 266
Menus 267
Pull-down Menus 267
Pop-up Menus 269
Option Menus 269
Tear-off Menus 270
Push Buttons 272
Radio Boxes and Toggle Buttons 274
The Motif Scrollbar 276
Text Windows 277
Dialog Boxes 279
Prompt Dialog 281

Selection Dialog 282
File Selection Dialog 283
Selecting a File from the Files Box 284
Choosing a File from Another Directory in the Directories Box 284
Choosing a File from Another Directory on the System 285
Command Box 285
Scale 287
Drag and Drop 289

Chapter 10 Command-line Options 293

Display and Geometry 294
Window Title and Application Name 295
Starting a Client Window as an Icon 297
Specifying Fonts on the Command Line 298
Reverse Video 298
Border Width 298
Specifying Color 299

Chapter 11 Setting Resources 303

Resource Naming Syntax 304
Syntax of Toolkit Client Resources 305
Tight Bindings and Loose Bindings 306
Instances and Classes 307
Wildcarding a Component Name with ? 308
Precedence Rules for Resource Specification 309
Some Common Resources 311
Event Translations 312
The Syntax of Event Translations 313
xterm Translations to Use xclipboard 315
Entering Frequently Used Commands with Function Keys 316
Other Clients that Recognize Translations 318
How to Set Resources 319
A Sample Resources File 320
Specifying Resources from the Command Line 321
The –xrm Option 321
How –name Affects Resources 322
Setting Resources with xrdb 323
Querying the Resource Database 323
Loading New Values into the Resource Database 324
Saving Active Resource Definitions in a File 324
Removing Resource Definitions 325
Listing the Current Resources for a Client: appres 325
Other Sources of Resource Definition 327
Setting Resources for Color Versus Monochrome Screens 328

Loading Custom Application Defaults Files 328
Setting Screen-specific Resources 330
Testing and Editing Resources with editres 331
What Widget Is That, Anyway? 332
editres Menus 333
Displaying the Widget Tree 334
Tracking Down the Widgets 335
Using the Resource Box to Create a Specification 336
Other Ways to Specify the Same Resource 340

Chapter 12 Specifying Color 343

What Color Names Can I Use? 343
Available RGB Colors 345
Surveying the RGB Database: rgb.txt 346
Alternative Release 5 RGB Color Databases 348
Specifying RGB Colors as Hexadecimal Numbers 348
The Xcms Color Spaces 349
A Mixed Bag: Using Both RGB and Xcms 351
Beyond the Rainbow: Inside the Color Models 351
The RGB Color Model 351
The X Color Management System 353
How Many Colors Are Available on My Screen? 354
Adding New Color Names 356
Changing the RGB Color Name Database 356
Finding the Color Values 356
Editing and Compiling the Database 357
Fixing a Corrupted RGB Database 358
Creating an Xcms Color Database 359
Device-Specific Tuning 360

Chapter 13 Customizing mwm 365

Activating Changes to the Window Manager 366
Switching Between Custom Version and System Defaults 366
The system.mwmrc File 368
mwm Functions 371
Menu Specifications 371
Key Bindings 373
Button Bindings 375
Customizing the Root Menu 376
Creating New Menus 378
Cascading Menus 378
Setting mwm Resources 380
Component Appearance Resources 381
mwm-specific Appearance and Behavior Resources 382

Client-specific Resources 383
Setting the Focus Policy 384
Using an Icon Box 385

Chapter 14 Setup Clients 391

When Should I Set Preferences? 391
Setting Display and Keyboard Preferences: xset 393
Keyboard Bell 393
Bug Compatibility Mode (Release 4) 394
Keyclick Volume 394
Enabling or Disabling Autorepeat 395
Changing or Rehashing the Font Path 395
Keyboard LEDs 395
Pointer Acceleration 396
Screen Saver 396
Color Definition 397
Help with xset Options 397
Setting Root Window Characteristics: xsetroot 398
Setting Root Window Patterns 398
Foreground Color, Background Color, and Reverse Video 399
Changing the Root Window Pointer 400
Modifier Key and Pointer Customization: xmodmap 401
Keycodes and Keysyms 403
Procedure to Map Modifier Keys 404
Displaying the Current Modifier Key Map 404
Determining the Default Key Mappings 405
Matching Keysyms with Physical Keys Using xev 406
Changing the Map with xmodmap 407
Expressions to Change the Key Map 408
Key Mapping Examples 409
Displaying and Changing the Pointer Map 411

PART THREE: Client Reference Pages 413

Intro 417
X 419
Xserver 437
appres 444
bdftopcf 447
bdftosnf 449
bitmap 450
editres 463
fs 471
fsinfo 475
fslsfonts 477

fstobdf 479
listres 480
mkfontdir 482
mwm 484
oclock 509
resize 512
sessreg 514
showfont 516
showrgb 518
showsnf 519
viewres 520
xauth 525
xbiff 529
xcalc 532
xclipboard 539
xclock 542
xcmsdb 546
xcol 548
xcoloredit 551
xconsole 553
xcrtca 556
xditview 558
xdm 561
xdpr 579
xdpyinfo 581
xedit 585
xev 596
xfd 598
xfontsel 601
xhost 605
xinit 607
xkill 610
xload 612
xlogo 615
xlsatoms 617
xlsclients 618
xlsfonts 619
xlswins 621
xmag 623
xman 627
xmh 635
xmodmap 660
xpr 665
xprop 670
xrdb 675
xrefresh 680
xsccd 682
xset 683

xsetroot 686
xstdcmap 689
xterm 691
xtici 725
xwd 729
xwininfo 731
xwud 735

PART FOUR: Appendices 739

Appendix A Managing Your Environment 743

Including X in Your Search Path 743
A Startup Shell Script 744
What Should Go in the Script 744
Server Access Control 748
Host-based Access and the xhost Client 748
User-based Access: xdm and the .Xauthority File 749
Console Messages 750

Appendix B Release 5 Standard Fonts 753

Appendix C Standard Bitmaps 795

Appendix D Standard Cursors 801

Appendix E xterm Control Sequences 807

Definitions 807
VT100 Mode 808
Mouse Tracking 813
Tektronix 4014 Mode 814

Appendix F Translation Table Syntax 819

Event Types and Modifiers 819
Detail Field 821
Modifiers 822
Complex Translation Examples 822

Appendix G Widget Resources 827

The Widget Class Hierarchy 827
Widgets in the Application 830
What All This Means 832
Complications 833
Athena Widget Resources 834
- Box 836
- Command 836
- Dialog 837
- Form 837
- Grip 839
- Label 839
- List 840
- MenuButton 841
- Paned 842
- Panner 844
- Porthole 845
- Repeater 846
- Scrollbar 846
- Simple 848
- SimpleMenu 848
- Sme 849
- SmeBSB 850
- SmeLine 851
- StripChart 851
- Text 852
- Toggle 854
- Tree 855
- Viewport 856

Motif Widget Resources 857
- ArrowButton 858
- BulletinBoard 858
- CascadeButton 859
- Command 860
- DialogShell 861
- Display 861
- DrawingArea 862
- DrawnButton 863
- FileSelectionBox 863
- Form 864
- Frame 866
- Gadget 867
- Label 868
- List 869
- MainWindow 871
- Manager 871
- MenuShell 873

MessageBox 873
PanedWindow 874
Primitive 876
PushButton 877
RowColumn 878
Scale 881
Screen 883
ScrollBar 884
ScrolledWindow 885
SelectionBox 886
Separator 888
Text 888
TextField 891
ToggleButton 892
VendorShell 894

Appendix H Obtaining Example Programs 899

FTP 899
FTPMAIL 900
BITFTP 901
UUCP 901

Glossary 905

Index 911